CLAIMS

What is claimed is:

1. An electrostatic discharge (ESD) protection network, comprising:

an inductor having at least one turn in the shape of a coil, the at least one turn having an inductance; and

at least one electrostatic discharge (ESD) clamp device having a parasitic capacitance, said ESD clamp device connected to the at least one turn of said inductor, the inductance of said at least one turn and the parasitic capacitance of said at least one ESD clamp device thereby forming a low pass filter.

2. The ESD protection network of claim 1, wherein said at least one turn and said at least one ESD clamp device are fabricated on a substrate.

3. The ESD protection network of claim 1, wherein said at least one turn and said at least one ESD clamp device are fabricated on an integrated circuit die.

4. An integrated circuit apparatus having an electrostatic discharge (ESD) protection network, said apparatus comprising:

an integrated circuit substrate;

a first insulation layer over a face of said integrated circuit substrate;

a plurality of conductive layers, each of the plurality of conductive layers in the shaped of a coil turn, the coil turn having a first and a second end;

a plurality of insulation layers interleaved between the plurality of conductive layers;

a one of [redacted] plurality of conductive layers prox[redacted]e to said first insulation layer and the other ones of said plurality of conductive layers stacked over the one with said plurality of insulation layers interleaved therebetween

a plurality of vias in the plurality of insulation layers, the plurality of vias connecting adjacent ones of the coil turns of said plurality of conductive layers, thereby forming an inductor coil; and

a plurality of electrostatic discharge (ESD) clamp devices, each one of said plurality of ESD clamp devices having a parasitic capacitance, said plurality of ESD clamp devices connected to the inductor coil turns, thereby forming a low pass filter.

5. The apparatus of claim 4, wherein respective ones of said plurality of conductive vias connect the second ends of each one of the coil turns of said plurality of conductive layers to the first ends of each of the adjacent ones of the coil turns of said plurality of conductive layers, thereby forming the inductor coil.

6. The apparatus of claim 5, wherein each of the respective ones of said plurality of conductive vias is at least one via.

7. The apparatus of claim 5, wherein each of the respective ones of said plurality of conductive vias is two or more vias so as to reduce electrical connection resistance thereof.

8. The apparatus of claim 4, wherein the shape of the coil turns of said plurality of conductive layers is selected from the group consisting of round, square, rectangle, triangle, oval, hexagon and octagon.

9. The apparatus of claim 4, wherein said plurality of conductive layers is made of metal.

10. The apparatus of claim 9, wherein the metal is selected from the group consisting of copper, aluminum, copper alloy and aluminum alloy.

11. The apparatus of claim 1, wherein said plurality of conductive layers is made of conductive doped polysilicon.

12. The apparatus of claim 4, further comprising a magnetic material interposed concentrically inside of an inner diameter of the coil turns of said plurality of conductive layers so as to increase the inductance thereof.

13. The apparatus of claim 12, wherein the magnetic material is selected from the group consisting of iron, iron oxide, ferrite ceramic and ferrous oxide.

14. The apparatus of claim 4, wherein at least one ESD clamp device is connected to each one of said plurality of conductive layers.

15. The apparatus of claim 4, wherein at least one of said plurality of conductive layers is connected to a one of said plurality of ESD clamp devices.

16. The apparatus of claim 4, wherein said plurality of ESD clamp devices are fabricated in said integrated circuit substrate and connected to said plurality of conductive layers with vias through said plurality of insulation layers.

17. The apparatus of claim 4, wherein said plurality of ESD clamp devices are fabricated on at least one of said plurality of insulation layers and connected to said plurality of conductive layers with vias through said plurality of insulation layers.

18. A method for providing an electrostatic discharge (ESD) protection network, comprising the steps of:

forming a plurality of conductive layers and a plurality of insulation layers, wherein said plurality conductive of layers and said plurality of insulation layers are interleaved, wherein each of the conductive layers is formed in the shaped of a turn of a coil having an inductance such that each of the coil turns has a first and a second end;

forming a plurality of vias in said plurality of insulation layers, the plurality of vias being located between the ends of adjacent coil turns wherein conductive material is formed in said plurality of vias thereby connecting the first end of one coil turn to the second end of the adjacent coil turn;

providing a plurality of electrostatic discharge (ESD) clamp devices, each one of said plurality of ESD clamp devices having a parasitic capacitance;

connecting said plurality of ESD clamp devices to the coil turns of said plurality of conductive layers, thereby forming a low pass filter.

19. The method of claim 18, wherein the step of connecting said plurality of ESD clamp devices comprises the step of connecting at least one ESD clamp device to each one of said plurality of conductive layers.

20. The method of claim 18, wherein the step of connecting said plurality of ESD clamp devices comprises the step of connecting at least one of said plurality of conductive layers is to a one of said plurality of ESD clamp devices.